

modification request being considered in this second processing round. ORBCOMM believes that such a spectrum plan would better serve the public interest.

V. The Commission Should Reserve Newly
Allocated NVNG Satellite Service Spectrum
for the Current Applicants

The NPRM also seeks comment on whether the WRC-95 or possible WRC-97 NVNG satellite service spectrum should be reserved for the second round applicants. As the Commission recognizes, it has authority to create such a set-aside.^{77/} ORBCOMM also believes that under the circumstances present here, it would further the public interest to reserve the spectrum for the current applicants or licensees, at least initially.

ORBCOMM agrees with the Commission's conclusion that it may limit frequency allocation because "it is settled that the Commission need not open each and every frequency for competing applications before assigning it."^{78/} This ability to limit frequency allocation is recognized in case law and Commission precedent.^{79/} Moreover, it is a desirable and equitable result. As the Commission readily acknowledges, ORBCOMM and the other second round Little LEO applicants "were instrumental in the United States' successful effort at WRC-95 to obtain additional

^{77/} NPRM at n. 60.

^{78/} NPRM at ¶ 78.

^{79/} See Rainbow Broadcasting Co. v. FCC, 949 F.2d 405, 409-10 (D.C. Cir. 1991); Telocator Network of America v. FCC, 691 F.2d 525, 528, 545 (D.C. Cir. 1982); Committee for Effective Cellular Rules v. FCC, 53 F.3d 1309, 1317, 1320 (D.C. Cir. 1995).

spectrum for the Little LEO service."^{80/} In recognition of the tremendous time and effort expended by the second round applicants to obtain this additional spectrum (including ORBCOMM's efforts in initiating service), the Commission should allocate WRC-95 spectrum to second round applicants and current licensees rather than initiating yet another processing round in the hopes that yet additional entrants may appear. Those companies that have not been involved in this process should not be permitted to be "free riders" on the backs of those companies that have invested significant resources and pioneered efforts to establish viable Little LEO systems in anticipation of receiving adequate spectrum in which to operate. For these same reasons, allocations to the NVNG satellite service that may be made at WRC-97 should also be reserved initially for the current applicants and licensees who will have expended significant efforts to procure those allocations.

Such a policy encourages the current applicants' continued effort, investment and innovation that has resulted in obtaining spectrum and, in the case of ORBCOMM, initiating actual service. Thus, reserving the spectrum would fulfill the Commission's goal of "facilitating the provision of efficient, innovative, and cost-effective satellite communications services in the United States."^{81/} The Commission has recognized the importance of such incentives in other contexts as well, in order to encourage investment and promote the development of particular

^{80/} NPRM at ¶ 78.

^{81/} NPRM at ¶ 10.

services and technologies, which thus serves the public interest.^{82/} To allocate WRC-95 or possible WRC-97 spectrum to others not in the second round of applicants would remove the incentive for the current applicants to participate in the ongoing WRC-97 preparatory activities as well as any future attempts to obtain additional spectrum that might become available, and thereby lessen the likelihood that such allocations will occur.

VI. Spectrum Auctions for NVNG Satellite System Licenses Would Disserve the Public Interest

The NPRM suggests a licensing framework under which the second round applicants (excluding licensees and companies affiliated with licensees) would file amended applications for one or more of the three discrete frequency segments, and if mutual exclusivity remained, the Commission would auction any segments where there was mutual exclusivity.^{83/} For a number of reasons, ORBCOMM believes that the NPRM's proposal to auction the NVNG satellite service licenses is an ill-considered idea and contrary to the public interest.

^{82/} See American Personal Communications, Cox Cable Communications, Inc., and Omnipoint Communications, Inc., Initial Authorizations in the Broadband Personal Communications Service, Order, FCC 96-94, released March 11, 1996, at ¶ 19 (noting that the pioneer's preference program "is designed to reward a particular entity for its innovative contributions to a new service by guaranteeing it a license, at a discounted price, without requiring it to participate in an auction"); Nextel Communications Request for a Pioneer's Preference for a Wide-Area 800 MHz Specialized Mobile Radio License in the New York Metropolitan Trading Area, Order, DA 96-1835, GN Docket No. 93-252, PR Docket No. 93-144, released November 6, 1996.

^{83/} NPRM at ¶ 79.

The NPRM recognizes some of the particular difficulties that arise with the proposal to auction off U.S. licenses for a satellite service that is inherently global by nature, insofar as the constellation of satellites will overfly all of the Earth's surface.^{84/} Thus, NVNG satellite systems are very different from terrestrial technologies that have been auctioned to date, where the service can readily be constrained to within the U.S. borders. Likewise, the only satellite service that has been auctioned -- Direct Broadcast Satellite (DBS) -- can also be constrained to within the United States because it uses geostationary satellites (that can limit the satellite footprints).^{85/} In addition, DBS involves frequencies that have been "pre-coordinated" through the adoption of a global ITU Broadcast Satellite Service plan, thereby minimizing one potential source of controversy or delay that would arise from auctioning Little LEO spectrum. The Commission therefore cannot rely on the success of its previous auctions to carry over to NVNG satellite license auctions.

Due to the nature of LEO satellite systems (where the satellite footprints move across the surface of the Earth), a system operator must launch an entire constellation of satellites to provide continuous coverage to any particular territory. As a result of launching a constellation, however, a LEO system can

^{84/} NPRM at ¶¶ 80-81.

^{85/} As the subsequent experiences with attempts to use Canadian DBS slots to provide service in the United States demonstrate, however, the auction of DBS licenses is not without further complications. Thus, even that initially "successful" auction may yet prove to have been unwise (or at least significantly more troublesome than anticipated).

then provide service anywhere on the surface of the Earth (assuming the operator obtains permission from the appropriate governmental authority to offer service within the relevant country). This ability to provide service globally also justifies the significant cost of launching a LEO satellite system. Conversely, if a potential LEO satellite system operator was not reasonably confident of its ability to obtain the requisite authority to offer services in multiple countries, that operator would be unlikely to commit the significant resources necessary to design, construct, launch and operate a LEO satellite system.

To the extent that other countries seek to emulate the Commission and also auction their domestic "landing rights" for the same spectrum, a potential NVNG satellite system operator faces overwhelming uncertainty as to its ability to offer service without having to pay exorbitant auction fees in multiple countries, and consequently the system operator could not know the cost for deploying its system (and hence the potential markets).^{86/} Given the possibility of a large number of sequential auctions, the potential operator also would be unable to gauge properly the values to bid for the spectrum in the initial auctions, since it would not know the total amount it

^{86/} ORBCOMM does not believe, in light of the positions taken by the U.S. government at the recent ITU World Telecommunication Policy Forum, that the United States would be willing to cede jurisdiction over global satellite system licensing to a outside body like the ITU. Nor is it likely that the U.S. government would support such an outside body maintaining control over all of the revenues from a single, global auction of LEO satellite spectrum.

would have to pay.^{87/} In addition, a potential LEO satellite system operator faces significant delays if it must go through the process of numerous sequential auctions, particularly if many countries must first adopt the necessary implementing legislation and create an auction system. The NPRM touches on these various problems, but does not fully reflect the negative impact auctions will have on NVNG satellite systems.^{88/}

The coordination of LEO satellite systems is complicated because of the global coverage and constantly moving footprints. An NVNG satellite licensed by, and providing service to, the United States at times will have a footprint that is simultaneously covering parts of Europe, Mexico and/or South America. Conversely, an NVNG satellite licensed by and providing service to Mexico will have a footprint extending into the United States.^{89/}

ORBCOMM also believes that auctions of NVNG satellite licenses will have other adverse consequences that were not

^{87/} The value of a license to use spectrum within any particular country for a Little LEO system will depend on whether the satellite service provider was able to offer service in only a limited number of jurisdictions (thus decreasing the value), or whether it would be able to take full advantage of the scale and scope economies of global operation that technically are inherent in a LEO satellite system.

^{88/} In addition, such auctions by the U.S. government could also spark auctions for the frequencies on which ORBCOMM is already licensed to operate. This would suddenly change ORBCOMM's cost structure and delay its ability to fully deploy its services, thereby eliminating the United States' head start over the NVNG satellite systems licensed by other countries. Such an outcome would be detrimental to U.S. interests.

^{89/} This is not some far-fetched hypothetical. In October 1994, Mexico submitted advance publication information for the LEOMEX-1 system, which therefore may have priority over the new U.S. second round NVNG systems for use of the WARC-92 spectrum.

addressed in the NPRM. ORBCOMM is concerned that it may become more difficult to obtain additional allocations for NVNG satellite services at future WRCs if foreign nations perceive the United States as merely seeking to "get its hands on" a valuable commodity to auction. Such a reaction is also likely to be heightened if the United States is perceived as preclusively auctioning off the spectrum, i.e., whatever spectrum plan is adopted here and whoever is licensed in the United States is treated by the U.S. government as being entitled to global use of that spectrum.

A related concern is the confusion within the United States as to what Commission auctioning of NVNG satellite service spectrum includes. The NPRM does not address, for example, whether the Commission intends or expects an extraterritorial reach of its NVNG licenses.^{20/} If, to take an example, the Mexican government licenses a different NVNG satellite system to use particular NVNG frequencies than wins the U.S. auction, will the Commission allow that Mexican-licensed system to operate within the United States (to the exclusion of the company that

^{20/} Compare NPRM at ¶ 75 (indicating an intent to include conditions governing sharing with the DoD satellites globally), with ORBCOMM Licensing Order, 9 FCC Rcd 6476 at ¶ 15 ("Thus, while we will require ORBCOMM to operate in accordance with the condition proposed above when operating within the United States, we do not wish unnecessarily to constrain our future flexibility to implement coordination methods that are most appropriate to the given set of circumstances. . . . Further, we will not impose a global bandsharing plan on U.S. licensees at this time. As we discussed in our Report and Order in the MSS Above 1 GHz proceeding, we do not believe it is appropriate for the United States to impose global bandsharing restrictions, which will directly impact the ability of other countries to access these LEO systems, absent indications from these countries regarding their planned use of these frequency bands.").

received a U.S. license for those frequencies at auction) simply pursuant to the soon-to-be adopted rules governing foreign-licensed satellite systems?^{91/} Even within the United States the Commission does not address what an auctioned license means for a service like NVNG that must share much of the spectrum on a co-primary, interference-free basis with terrestrial services.

In sum, ORBCOMM anticipates a number of problems and a great deal of confusion surrounding an attempted U.S. auction of licenses for what inherently are global systems. In light of the expected chaos, and assuming a system of sequential auctions, the Commission's proposal for auctions is likely to create significant delay in an NVNG satellite system operator being able confidently to proceed with deployment of its system. As a result, any presumed advantage in speed from licensing by auctions^{92/} would be negated.

Another supposed advantage of auctions is the ability to encourage efficiency by allowing the spectrum to go to the bidder that values it highest and therefore would use it most effectively.^{93/} However, under the frequency plan proposed by the NPRM, the Commission would be preordaining the spectrum blocks (and presupposing particular system designs, such as

^{91/} Amendment of the Commission's Rules to Allow Non-U.S.-Licensed Space Stations to Provide Domestic and International Satellite Service in the United States, Notice of Proposed Rulemaking, FCC 96-210, released May 14, 1996.

^{92/} NPRM at ¶ 86.

^{93/} NPRM at ¶ 87: "competitive bidding should encourage efficient use of the electromagnetic spectrum. An applicant would only bid for the minimum amount of spectrum needed, thereby encouraging spectrum efficiency."

FDMA/TDMA versus spread spectrum modulation), thereby severely limiting the ability of an applicant to select the most efficient amount or use of the NVNG satellite service spectrum. Moreover, the NPRM proposes to exclude from even participating in the auction the first round licensees, who potentially are positioned to make the most efficient use of the spectrum.^{94/}

Thus, many of the presumed advantages of conducting an auction would prove illusory when applied to NVNG satellite service licenses. Indeed, to the extent that auctions would have adverse repercussions on international relations and make it more difficult to obtain additional allocations at future WRCs, auctions would disserve the public interest. Although ORBCOMM recognizes that comparative hearings also entail drawbacks (namely the time and expense suffered by the Commission and the applicants to conduct the proceedings), those drawbacks are likely to prove relatively small compared with auctions in this case. Conversely, an advantage of a comparative hearing would be that the Commission could specifically consider the relative advantages of making additional spectrum available to ORBCOMM or the other first round licensees (or affiliates of first round licensees).

In light of the relative drawbacks of auctions under these circumstances, ORBCOMM urges the Commission to consider a comparative hearing in lieu of an auction for the NVNG satellite service. The Commission may be able to minimize the delays by

^{94/} Severely limiting the number of participants in the auction is also likely to lower the bid amounts and thus inhibit the ability of the auction to recover for the public a portion of the value of the spectrum. 47 U.S.C. § 309(j)(3)(D).

carefully supervising the hearing and devising expedited procedures, or there may be other alternative dispute resolution procedures that could be applied (e.g., third party arbitration). At any rate, in deciding how to proceed, the Commission must recognize that auctions are particularly ill-advised for a global satellite service like NVNG.^{95/} ORBCOMM thus recommends that the Commission decline to use auctions to award the NVNG satellite service licenses.^{96/}

^{95/} Moreover, ORBCOMM believes the Commission may need to use a comparative proceeding in any event. Given the dynamics and the history of this processing round to date, ORBCOMM could readily foresee the applicants reaching a partial settlement, i.e., some of the applicants deciding to join together to avoid the imposition of an auction. Under the Commission's traditional analogous policy of treating orbital slots as fungible (e.g., Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, DA 96-713, released May 7, 1996 at ¶ 4; Pan American Satellite Corporation, 60 Rad. Reg. 398 (1986) at ¶ 33), presumably there would be no mutual exclusivity if it ended up that there were three or fewer remaining applicants (under the presumption that the Commission views each of the three spectrum blocks as fungible). However, if there was not a complete settlement (i.e., all of the parties agreed which of the remaining entities would get which of the spectrum blocks), then the Commission would still need some method of assigning the blocks to the particular remaining applicants. It could not make that assignment by lottery (since it lacks lottery authority), and it could not make that assignment by auction (since there would not be mutual exclusivity under the traditional tests), thus leaving the Commission with a difficult decision and no process (other than a comparative hearing) to make that decision.

^{96/} If, despite these various risks, the Commission proceeds with auctions, ORBCOMM comments on two aspects of the auction mechanisms. First, as detailed above, ORBCOMM and the other first round licensees should be eligible to bid at the auction. Second, no provision should be made for bidding credits or delayed payments for "designated entities." Cf., NPRM at n. 73. Given the Commission's past experiences with financially unqualified applicants, the Commission should not create preferences (e.g., bidding credits or payment deferrals) for companies without the resources to pay their bid amounts, much less the ability to construct, launch and operate a satellite system costing hundreds of millions of dollars.

VII. Additional Issues Raised in the NPRM

ORBCOMM also wants to comment on three additional issues raised in the NPRM: unauthorized and interfering transmissions (§ 101); exclusive arrangements (§ 102); and amended applications (§§ 103-106). ORBCOMM recommends that the Commission not take any actions in this proceeding that might unintentionally harm or prejudice the current NVNG satellite service licensees.

A. Unauthorized and Interfering Transmissions

The NPRM seeks comment on the need for the Commission to adopt specific methods for preventing unauthorized transmissions since the global, mobile nature of the service technically supports roaming even in countries where the NVNG satellite system may not be authorized. One suggestion of the NPRM is to require each Little LEO terminal to be equipped with position determination capabilities so that the system operator could prohibit transmissions from countries that have not authorized that system. ORBCOMM believes that such a solution is unnecessary and impractical.

Requiring such capabilities would impose two different significant costs on the NVNG satellite systems. First, while NVNG satellite systems can use Doppler shift calculations to determine the location of the user transceivers, the accuracy of those calculations is not precise -- generally about 600 to 1000 meters. From a cold start, as could be expected in an emergency situation, it will take from 7 to 10 minutes for calculating the

first fix, which will not be precise location information. Alternatively, more refined location information could be obtained by incorporating Global Positioning Satellites ("GPS") capabilities into each user transceiver, but such an enhancement significantly increases the cost (presently some \$200), size, and power consumption of the unit.^{97/} In addition, the GPS calculations take some time to be completed (currently approximately 2-7 minutes from a cold start), and the accuracy is limited to 100 meters.

In light of the relative inaccuracy of these various alternatives, an NVNG satellite system operator could not discern which country a customer was in if he or she was near a border. More importantly, the time necessary to perform the location calculations (by either Doppler or GPS) could, in many cases, render the service ineffective. For example, if an individual was attempting to send an emergency message, the satellite system would first have to determine the user's location relative to its authorized service territories, and that information would take up to roughly seven minutes to calculate; only after determining that the transceiver was within an authorized territory could it allow the user to send the message. However, the average satellite pass is less than 15 minutes on average. Therefore, by the time the system determined that the user could transmit, the satellite could be out of view, and another satellite might not come into view for another ten minutes (depending on the user's

^{97/} The power drain of the added circuitry and receiver is particularly troublesome for battery powered transceivers, which is what will be used in many emergency situations.

location). Thus, such a requirement would impair the usefulness of NVNG satellite services for emergency communications.

In addition to the costs imposed on the users in the form of higher priced transceivers, requiring the system operator to determine the user's position before permitting transmissions would cripple the NVNG satellite system capacity because of the added "overhead" on each message. NVNG satellite systems have access to only a limited amount of spectrum, and each transmission is limited in time (under footnote US323). Requiring the system to carry "pre-transmission" transmissions with the location information to determine whether the user was within an authorized country would consume a significant amount of the system's capacity, and leave little capacity for actually carrying the messages. NVNG satellite systems would not be economical under these conditions.

ORBCOMM will use a simpler method for limiting access to users from countries that have authorized ORBCOMM's services. In addition to other contract provisions limiting ORBCOMM's licensees' ability to provide service outside their assigned territory, ORBCOMM does not permit its licensees to provide service to an end user who has a billing address outside of such licensee's authorized service territory. Although this method is not failproof, it generally serves to limit the provision of service to an unauthorized region. ORBCOMM has not received any objections from any governments indicating this approach to be inadequate.

ORBCOMM also believes that the proposal to require a system to determine a user's location is not only inefficient and

costly, but that such a requirement is unnecessary. The issue basically concerns "enforcement" of an individual country's requirements within its borders, and as such it is clear that the U.S. government does not need to impose a severe, prophylactic measure to preclude possible violations of another country's regulations even before any problems have arisen.

ORBCOMM does not anticipate that there will be any significant difficulties with regard to unauthorized NVNG satellite service transmissions. Indeed, the United States wisely took the position at the recent ITU World Telecommunication Policy Forum that extensive protective measures were unnecessary, a position that was adopted by the Forum. ORBCOMM thus strongly urges the Commission not to adopt a requirement that NVNG satellite system operators know the precise location of the user before allowing transmissions. If severe problems develop later, the Commission retains the authority to revisit this issue, but in the meantime there is no need to fatally cripple the NVNG satellite systems by imposing such a requirement.

B. Exclusive Arrangements

The NPRM also seeks comment on whether to adopt limitations on an NVNG satellite system licensee's ability to enter into exclusive arrangements with other countries concerning traffic to or from the United States, similar to the restrictions imposed on the Big LEOs.^{98/} The proposed limit is intended to

^{98/} NPRM at ¶ 102.

preclude an NVNG satellite system licensee from using political or market power in a country and leveraging that power to affect competition adversely. ORBCOMM has no objection to such a limitation, assuming it is properly circumscribed.

As described in the NPRM, the proposal appropriately recognizes that the Commission's authority does not have an unlimited extraterritorial reach, and would tie the restriction to traffic to or from the United States. ORBCOMM also believes that the NPRM correctly recognizes that spectrum coordination and spectrum availability in a particular country may limit the number of NVNG satellite systems that a country can authorize. Assuming that a country's limit on the number of authorized NVNG satellite systems is driven by such legitimate spectrum shortages, the Commission should not penalize the NVNG satellite systems that are authorized.

C. Amended Applications

The NPRM indicates the need for the second round applicants to modify their applications to conform to the rules that will be adopted in this proceeding and to update the information on their qualifications.^{99/} ORBCOMM endorses the Commission's efforts to speed the ultimate second round licensing by conducting the rulemaking and review of the qualifications in parallel. ORBCOMM comments on this portion of the NPRM only to remind the other applicants that in modifying their applications to take account of the proposed frequency blocks, they must

^{99/} NPRM at ¶¶ 103-104.

demonstrate not only how they will operate compatibly with NOAA and DoD, but also how they will avoid harmful interference to ORBCOMM and the other first round licensees.^{100/}

VIII. Conclusion


As detailed in these comments, ORBCOMM disagrees strongly with several aspects of the NPRM. Of primary concern is the proposal to now exclude ORBCOMM and the other first round licensees from this processing round. Such a prohibition is unsupported, unlawful retroactive rulemaking and bad policy. ORBCOMM also believes that the proposed three spectrum blocks should be changed to avoid degrading the current licensees' services. In addition, ORBCOMM objects to the NPRM's proposals to use auctions to award NVNG satellite service licenses. Auctions are particularly ill-suited for global satellite systems such as these. ORBCOMM additionally urges the Commission not to require the NVNG satellite systems to determine a user's location before allowing a message to be transmitted.

For all of the reasons articulated above, ORBCOMM urges the Commission to modify the proposals in the NPRM as set forth in these comments. By allowing ORBCOMM to continue to participate in this processing round, revising the spectrum blocks to use the WRC-95 spectrum, using comparative hearings instead of auctions, and taking the other steps suggested herein,

^{100/} 47 C.F.R. § 25.142(a)(1). See also, NPRM at ¶ 53 (discussing the need for the applicants to accommodate the frequency plan resulting from the coordination between ORBCOMM and NOAA in the 137-138 MHz band).

the Commission will have created NVNG licensing and service rules that best serve the public interest.

Respectfully submitted,

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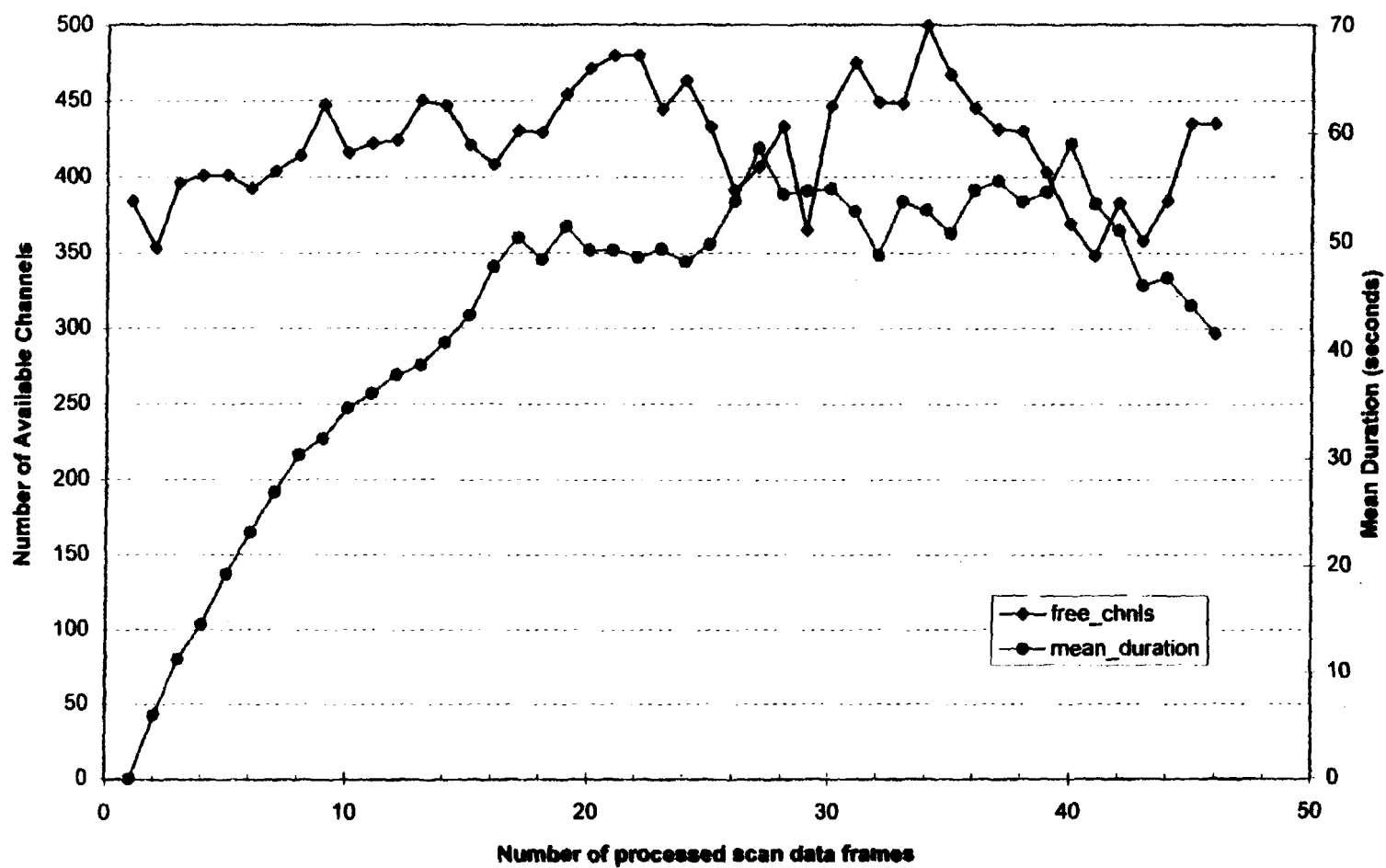
Counsel for Orbital Communications
Corporation

Dated: December 20, 1996

Channel Availability

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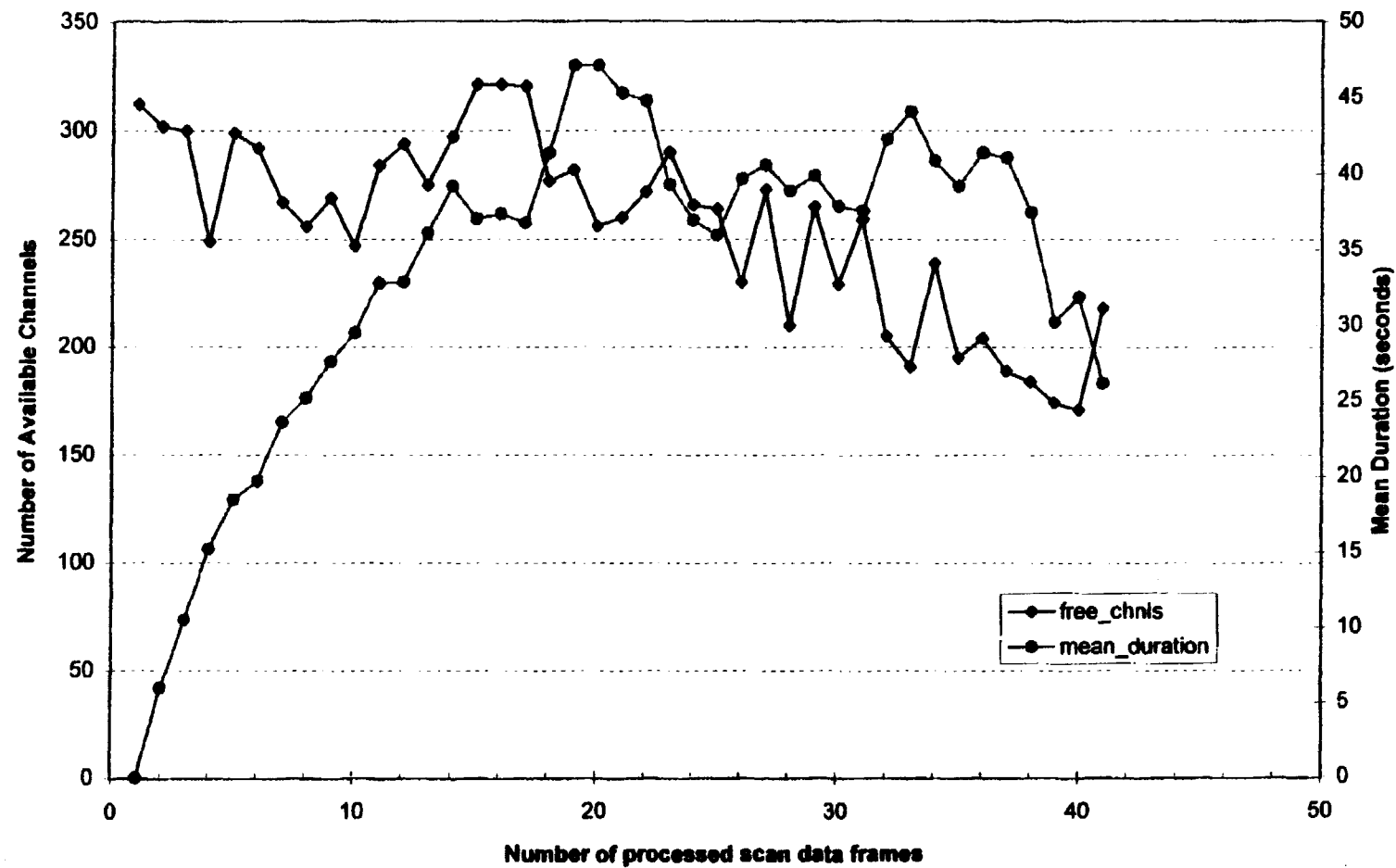


ATTACHMENT 1

Channel Availability

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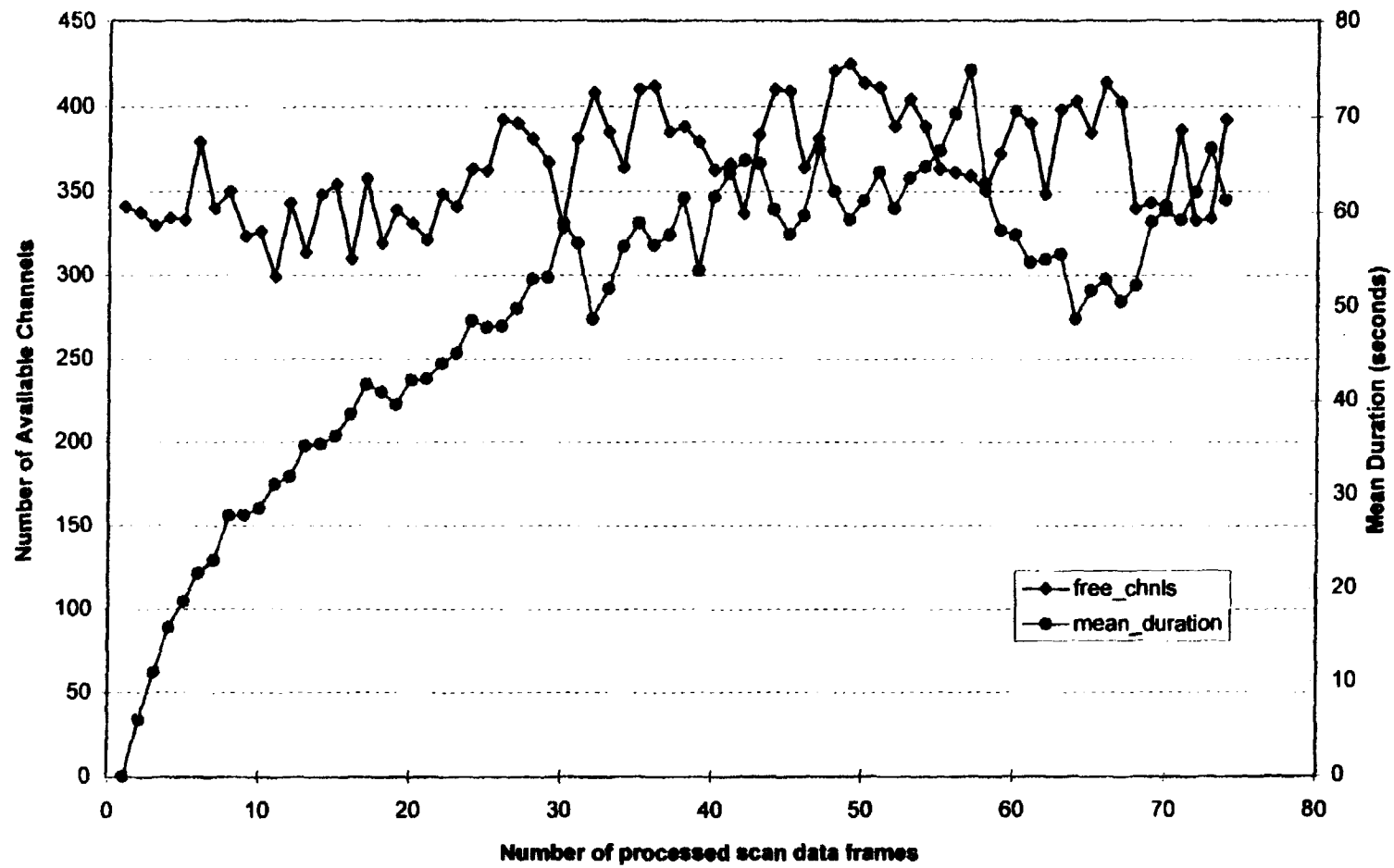
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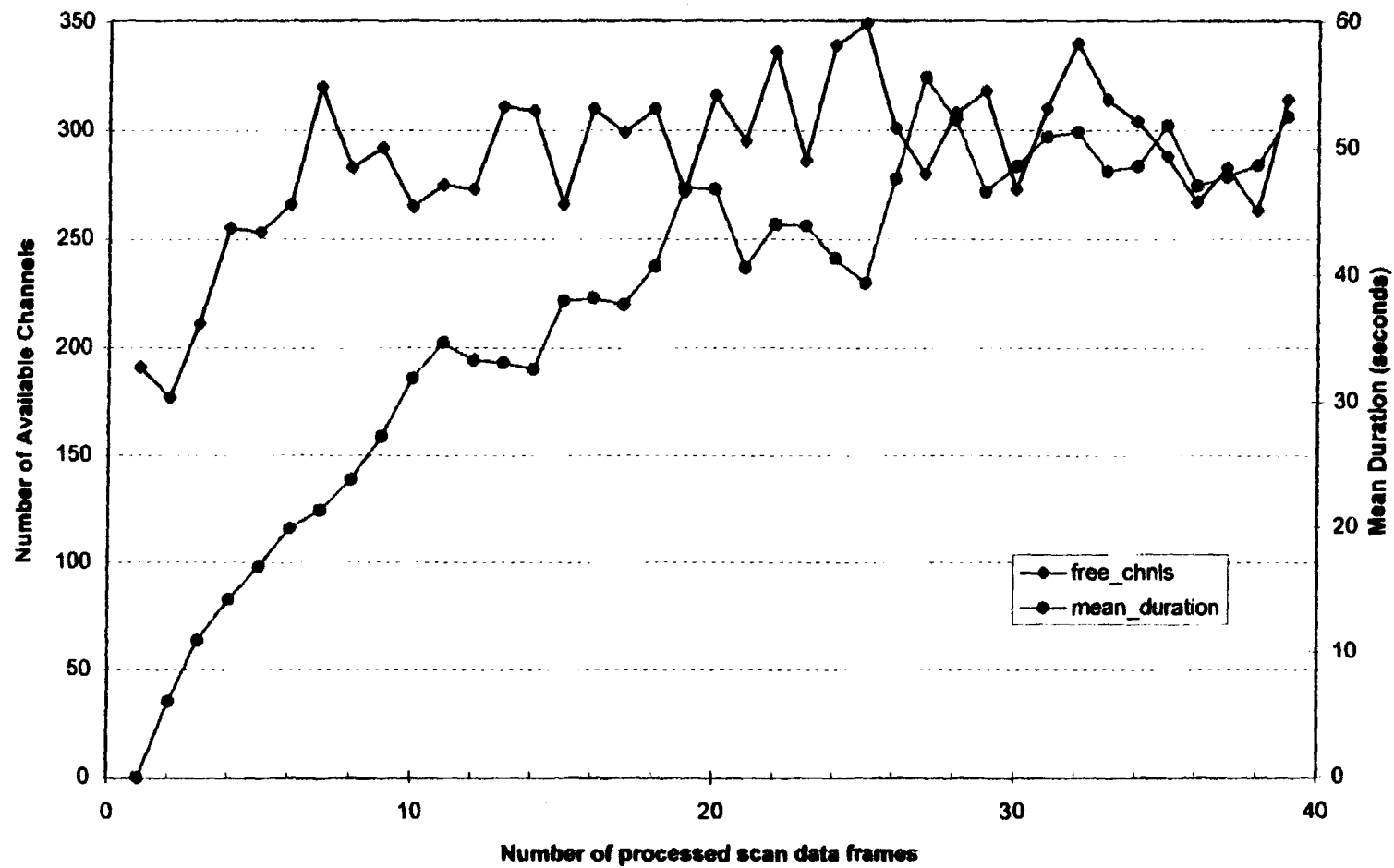
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Channel Availability

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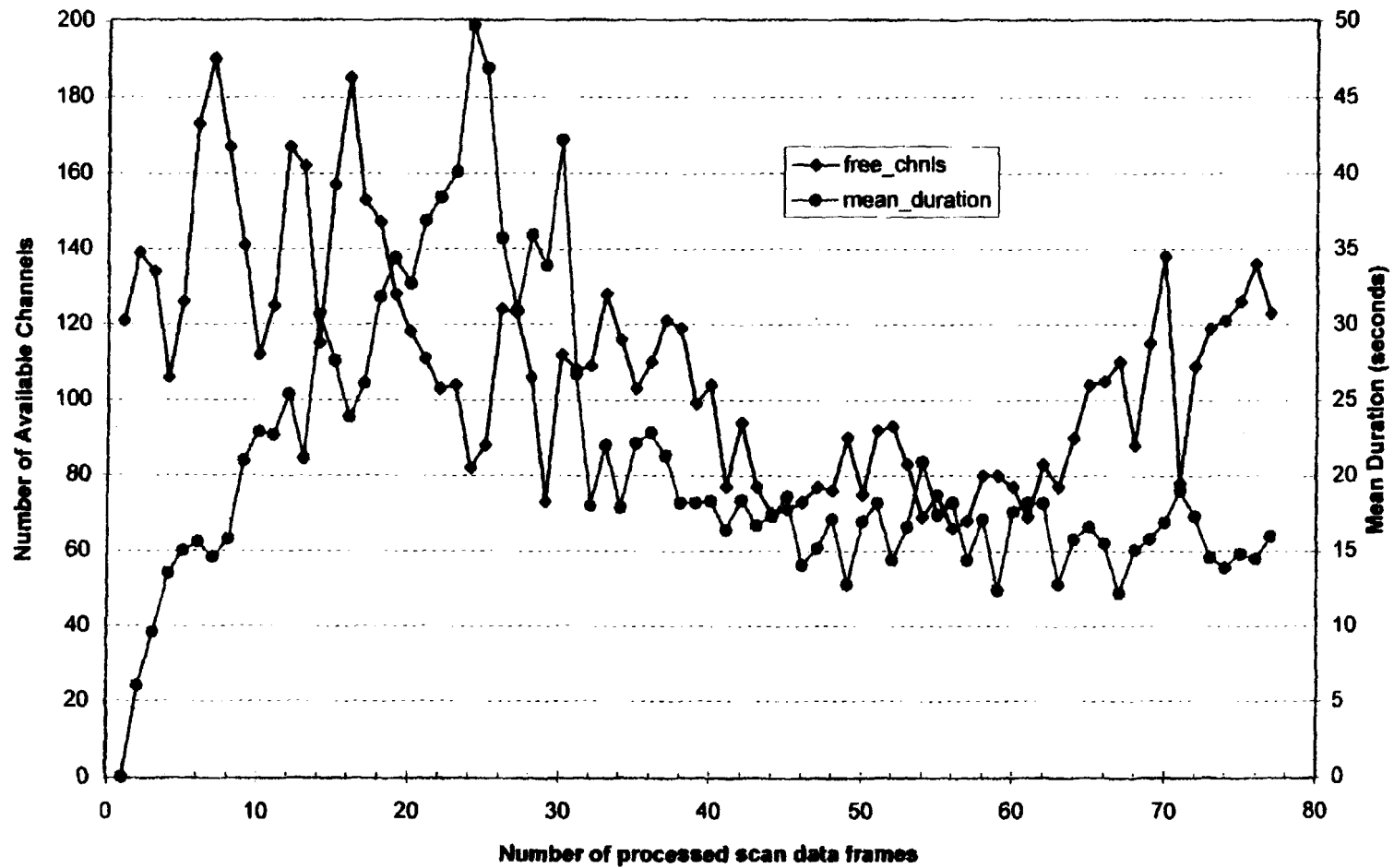
Dulles, VA 18 December 1996 10:35 am - 10:45 am EST



Channel Availability

FM2, Orbit 9032, HPT=-128.5 dBm

Dulles, VA 18 December 1996 12:16 pm - 12:28 pm EST



Channel Availability

FM1, Orbit 9032, HPT=-128.5 dBm

Dulles, VA 18 December 1996 1:08 pm - 1:18 pm EST

